

REMARKS

Claims 1-15 are currently pending in the subject application and are presently under consideration. Claim 1 has been amended as shown on p. 3 of the Reply. In addition, the specification has been amended as indicated on p. 2.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-5 Under 35 U.S.C §112

Claims 1-5 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(i) Examiner states that there is insufficient antecedent basis for use of the limitation “the contents” in claim 1. Counsel respectfully disagrees. In ¶ 0034, a neighbors array is said to contain “edges,” which are defined as including the addresses of two nodes that are neighbors. In ¶ 0031, the length of a neighbors array is defined as the number of edges in that array. The abstract clearly defines “edge” with reference to graph theory: “Computing entities in a dynamic, decentralized computing environment are treated as if these computing entities were nodes in a graph linked by edges...” It seems clear from these antecedents that those skilled in the art would recognize that a neighbors array is a data structure that specifies all existing neighbors of a particular computing entity. We respectfully request that this rejection be withdrawn.

(ii) Examiner further states that in claim 1, it is not clearly indicated whether “node’s neighbor” refers to the first node’s neighbor or the second node’s neighbor. The intention is to refer to the neighbors array of both nodes. To clarify this issue, claim 1 has been amended to recite, in part, “the match being formed when a first node queries the availability of a second node and the second node queries the availability of the first node, with state of *both nodes* being set to true in the case of a match and the contents of *each* node’s neighbors array or alternative data structure cleared.” As amended, claimed subject matter is no longer indefinite, and as such, it is respectfully requested that these rejections be withdrawn.

II. Rejection of Claims 1-3 Under 35 U.S.C. §103(a)

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Becker (US 7,117,264), hereinafter Becker, in view of O'Mahony (US 2005/0025144), hereinafter O'Mahony. Withdrawal of this rejection is requested in view of the following comments. In particular, it would not have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Becker and O'Mahony. Moreover, as claimed subject matter in O'Mahony differs substantially from the limitation of claim 1 compared by Examiner, neither Becker nor O'Mahony, either alone or in combination, teach or suggest all limitations of claimed subject matter.

The subject matter relates to pairwise matching of nodes in a network, exemplary networks being protein binding maps of a cell, social networks, or computer implementations of social networks. Becker recites a method for communicating in a network. Discovery commands are sent from a node, resulting in compiling a "peer table" listing all nodes that could possibly communicate with the first. Query commands are then sent between neighbor nodes. The implementation envisioned in Becker is file sharing, and in this implementation, Becker teaches establishing which nodes are in a network (the discovery command) and then determining which nodes have a desired file (the query command).

O'Mahony also relates to nodes communicating within a network. O'Mahony recites a discovery command by which the availability of physical layer connections can be assessed. The application recited is aggregating physical layer channels so as to increase the speed of communication.

Claim 1 recites "A decentralized computing environment, comprising: a number of nodes, each node in the number of nodes being capable of being a neighboring node of other nodes in the number of nodes, each node being capable of querying the availability of neighboring nodes for a match, the match being formed *when a first node queries the availability of a second node and the second node queries the availability of the first node*, with state of both nodes being set to true in the case of a match and the contents of each node's neighbors array or alternative data structure cleared." (emphasis added)

The Examiner states that although Becker does not recite all limitations of claim 1, O'Mahony discloses the limitations of claim 1 on which Becker is silent, these limitations comprising clearing the contents of the neighbors array (or alternative data structure). As Becker

clearly focuses on file sharing as the envisioned application (column 1, line 27 – column 2, line 2), maintaining and updating the peer table is critical to the claimed methods. As such, Becker teaches away from claim 1, as clearing the data relating to neighboring nodes is essential to applicants' system for node matching, in that it minimizes the computational resources needed for the social network or related exemplary application. Although O'Mahony indeed establishes that it was known in the art that clearing a data structure relating to availability of a node was known in the art, there would have been no reason to combine this teaching with a method where maintaining the data structure was critical.

Moreover, the data structure cleared upon successful matching in O'Mahony is very different from the one cleared in application. In application, what is cleared upon matching a node is a data structure holding information *relating to the node's set of neighbors*. In O'Mahony, what is cleared upon matching is a data structure holding information *relating to availability of the node itself*. As it is something different that is claimed, neither Becker nor O'Mahony, either alone or in combination, teach or suggest all limitations of claim 1.

As claims 2 and 3 depend from claim 1, which should be in condition for allowance, these claims should also be allowed.

III. Rejection of Claims 4-15 Under 35 U.S.C. §103(a)

Claims 4-15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Becker, in view of Shah-Heydari (US 2003/0126299). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Becker, Shah-Heydari and Mahony, alone or in combination, fail to teach or suggest each and every limitation of applicants' claimed invention. Moreover, it would not have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of O'Mahony with either Becker or Shah-Heydari.

Claimed subject matter relates to an "inviter" that invites nodes to make a match. Shah-Heydari discloses a *hierarchical* inviter. The inviter requires designation of a parent node that then queries potential daughter nodes (¶ 0045 - ¶ 0047). By contrast, applicant's claim 4 discloses a *global* inviter that queries the entire network to determine potential pairwise matches in the network. The function of Shah-Heydari's hierarchical inviter is to repair a damaged network by dynamic *local* reconfiguration. By contrast, the function of applicant's global inviter

is to allow for dynamic *global* reconfiguration of the social (or other) network. As such, although Examiner is correct that Shah-Heydari discloses an inviter; it is drastically different from the inviter disclosed by applicant and performs a very different function.

Moreover, it would not have been obvious to combine teachings of O'Mahony with either Becker or Shah-Heydari. The implementation envisioned in Becker is file sharing, and in this implementation, Becker teaches establishing which nodes are in a network (the discovery command) and then determining which nodes have a desired file (the query command). In Becker, establishing and maintaining a "peer table" that lists all possible neighbor nodes of a single node is critical to function. The implementation envisioned in Shah-Heydari is repair of localized disruption in a mesh network, such as a fiber optic network. As such, there is no reason to globally search the entire network for possible matches or build anything comparable to a neighbors array. As such, it would not have made sense to combine the teachings of either Becker, in which maintaining the contents of a particular data structure is critical, or Shah-Heydari, in which this type of data structure is never needed in the first place, with O'Mahony, which teaches clearing the contents of this type of data structure.

As Becker, O'Mahony and Shah-Heydari fail to teach or suggest all limitations of claim 4 and because it would not have been obvious to one of ordinary skill in the art to combine O'Mahony with either Becker or Shah-Heydari, it is respectfully requested that this rejection be withdrawn. Moreover, both claim 4 and claim 5 depend from claim 1, which should now be in condition for allowance, and as such, both claims should also be allowed for this reason.

Claim 6 recites a method that includes both global invitation to match nodes in a social network or similar network and clearing the data structure holding information about the entire set of neighboring nodes after a pairwise match is made. Shah-Heydari is silent on the type of inviter recited herein (a global inviter that queries and entire system to make pairwise matches versus a hierarchical inviter that queries locally to initiate daughter-child relationships that are extensible (e.g., daughters of daughters). O'Mahony recites clearing a very different type of data structure (in which a node stores information with regard to its own availability status rather than with regard to its potential interaction partners). Moreover, the step of clearing a data structure recited in O'Mahony would not have been obvious to combine with the method recited in Becker, in which maintaining the corresponding data structure was critical, or with the method recited in Shah-Heydari, in which no such data structure is ever created in the first place.

As Becker, O'Mahony, and Shah-Heydari do not, either alone or in combination recite all limitations of claim 6, and as it would not have been obvious to combine teachings of O'Mahony with either Becker or Shah-Heydari, it is respectfully requested that this rejection be withdrawn. As claims 7-10 depend from claim 6, which should now be in condition for allowance, these claims should also be allowed. As claim 11 recites the computer-readable medium having computer-executable instructions for performing the method of claim 6, which should now be in condition for allowance, it and dependent claims 12-15 should also be allowed.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP2198US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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